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THE DEMISE OF DECISION MAKING

How Information Superiority Degrades our Ability to Make Decisions

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Paper Abstract

The quest for information superiority degrades the decision making ability of United States military leaders and will worsen without adjustments to professional military education and training. This pursuit has degraded American military leaders' ability to make intuitive judgments, develop creative solutions, and critically consider a situation. Additionally, this hunt for more information increases a leader's risk aversion and propensity to micromanage subordinate leaders, two trends that can quickly erode trust among the force. Despite the claims of some, information superiority can increase fog and friction for military leaders instead of reducing or removing it. It is because of these reasons that the United States military should address shortfalls in education and training to decrease the chance of self inflicted decision failures.

Introduction

IBM estimates that human beings currently create 2.5 quintillion bytes of data every day.¹ For many people this figure has very little meaning without the requisite context. When stated differently, the amount of data that presently exists in the world is mind numbing. Eric Schmidt, Executive Chairman of Google, simplified the topic when he stated that every two days human beings create as much data as that created from the dawn of civilization through 2003.² He made that assertion nearly three years ago, and it appears that most researchers have stopped counting this enormously exponential growth. With this vast amount of information available, how can any organization sort through the seemingly endless stream of data to provide decision makers with the right amount at the right moment so they may be able to make the best choice? Add to the equation an unknown variable, such as an adversary's intentions, and the problem would appear to be insurmountable.

America's military is very similar to other consumers of information with one important distinction in mind. The failure to make the right decision at the right time with available information could lead to much more severe consequences for military commanders than for leaders in the private sector. Certainly, poor decisions can have disastrous affects for corporations just as they would for any organization, but the unfortunate outcome usually is financially related. Conversely, bad or untimely decisions in the military realm could result in the failure to achieve national strategic goals. With the cost of failure so high, it is logical to assume that the United States' military educates and trains its leaders to deal with increased information while at the same time recognizing their own

¹ "Big Data at the Speed of Business," IBM, accessed April 5, 2013, <http://www-01.ibm.com/software/data/bigdata/>.

² DanTynan, "Google: Brace Yourselves for the Data Explosion," PC World, last modified August 6, 2010, http://www.pcworld.com/article/202723/Google_Brace_yourselves_for_the_data_explosion.html.

decision making limitations. However, this assumption is dangerously distant from reality in that the military continues to teach, train, and employ linear decision making models and planning processes without addressing the affects of increased information on these methods. This is not to say that these decision making models or planning procedures are obsolete or have no place in today's operating environment. Quite the opposite, these procedures are well established and have proven to be effective in many recent situations. Nonetheless, it is incumbent on the United States military to address a leadership shortfall with potentially harmful consequences.

With that in mind, the intent of this essay is to argue that, in five distinct ways, the quest for information superiority degrades the decision making ability of United States military leaders and will worsen without adjustments to professional military education and training. First, this pursuit of information superiority creates decision paralysis by inhibiting intuitive decision making or *coup d'oeil*. Second, it creates a risk averse culture because leaders require more data to make a decision in order to avoid backlash if the outcome is negative. Third, information superiority stifles both creative and critical thinking because it produces an overreliance on the analysis of facts and data rather than emphasizing new or reflective ideas. Fourth, it fosters a centralized control and centralized execution atmosphere whereby higher level commanders are making decisions once made at lower echelons. Lastly, and most dangerously, it produces the false belief that the fog of war can be removed and minimizes the importance of focusing on the principle of interaction. For these reasons, the United States military's emphasis on information superiority without corresponding changes to its decision making education creates a disparity that should be addressed.

Background

In general terms, decision making is about selecting between more than one option to produce a specific result.³ The process that people use to arrive at their choice is a subject of much debate. For years, many professionals in this field of study concentrated on what Peer Soelberg found in a 1967 study of job seeking decision making. Soelberg contended that people used a “rational choice strategy” whereby they determined options, identified ways to measure options, weighted their evaluation criteria, scored each option, and then picked the one with the highest score.⁴ This method is strikingly similar to the Military Decision Making Process (MDMP). In fact, Army Doctrine Publication 5-0 defines MDMP as “an iterative planning methodology to understand the situation and mission, develop a course of action, and produce an operation plan or order.”⁵ Likewise, Joint Publication 5-0 defines the Joint Operation Planning Process to be “an orderly, analytical process, which consists of a set of logical steps to examine a mission; develop, analyze, and compare alternative COAs; select the best COA; and produce a plan or order.”⁶ Thus, considering the similarities, it is apparent that the military has a well-established relationship with rational decision making, one reinforced at military education facilities and training centers worldwide. Some would argue that these processes are sufficient for decision making in all environments and can be tailored to meet the requirements of any situation.

The military appears to be less acquainted with other decision making methods, one of which is the Recognition Primed Decision model created by Gary A. Klein, a well-known

³ Decision Making Confidence, accessed April 25, 2013, <http://www.decision-making-confidence.com/explain-the-decision-making-process.html>.

⁴ Gary A. Klein, *Sources of Power : How People Make Decisions* (Cambridge, Mass: MIT Press, 1999), *eBook Collection (EBSCOhost)*, EBSCOhost (accessed April 25, 2013), 10.

⁵ Army Doctrine Publication 5-0, *The Operations Process*, Headquarters, Department of the Army, May 2012, http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/adp5_0.pdf, 8.

⁶ Joint Publication 5-0, *Joint Operational Planning*, August 11, 2011, http://www.dtic.mil/doctrine/new_pubs/jp5_0.pdf, IV-1.

research psychologist and a pioneer in the area of naturalistic decision making.⁷ Mr. Klein focused his attention on observing how people make decisions in their natural environment while under difficult conditions. Using experienced decision makers from groups such as firefighters, doctors, and military professionals, naturalistic decision making focuses on problems where the stakes are high, time is limited, and oftentimes the goals and procedures are ill defined.⁸ This research allowed Klein to develop the Recognition Primed Decision model which combines two systems at work during a decision: the way people analyze a situation to identify the best course of action, and their evaluation of that option by visualizing it.⁹ Klein's model would appear to be nearly antithetical to rational decision making. Instead of considering several courses of action, Klein proposes that experienced decision makers can and do choose a suitable course of action without necessarily going through a linear-type process, especially in a time-limited situation. This essay will use the Recognition Primed Decision model, along with other methods of decision making, as a framework to support the aforementioned reasons for the degraded decision making ability of United States military leaders. It is beyond the scope of this essay to recommend suitable solutions that would address all of the deficiencies. However, it will conclude with a recommendation on how best to view the problem and potential starting points for action.

More is Not Necessarily Better – An Argument for *Coup d'oeil*

The United States military's quest for information superiority creates decision paralysis by inhibiting intuitive decision making or *coup d'oeil*. This desire to know as much information about an adversary as possible is not new. In fact, with respect to information

⁷ Karol G. Ross, Gary A. Klein, Peter Thunholm, John F. Schmitt, and Holly C. Baxter, "The Recognition-Primed Decision Model," *Military Review* 84, no. 4 (2004): 6-10, <http://search.proquest.com/docview/225314469?accountid=322> (accessed April 25, 2013), 10.

⁸ Klein, *Sources of Power*, 4-6.

⁹ *Ibid.*, 24.

and intelligence, United States military doctrine seems to fall in line with Sun Tzu's proclamation over 2000 years ago: "If you know the enemy and know yourself, you need not fear the result of a hundred battles."¹⁰ This assertion appears to illustrate the way American military leaders structure plans and make decisions. However, much has changed since Sun Tzu first wrote these words. Specifically the amount of information and intelligence readily available to a decision maker is probably unimaginable to those who lived over two centuries ago. Nonetheless, a key question remains. Why would anyone not want to gather as many facts or data points as they possibly could and make the most informed decision possible? The answer is found in numerous examples throughout history where the information existed, but for a multitude of reasons, the right choice evaded decision makers. In some of these cases, decision makers were overcome with information or relied too heavily on intuition. In others, it appears they simply did not understand the limitations and barriers of any decision making process.

Although some recent doctrinal publications and other documents indicate that United States military leaders understand and agree with the notion of *coup d'oeil*, it appears that little has been done to instill this across the force. Indeed, Chairman of the Joint Chiefs of Staff, General Martin Dempsey, spoke of an "inner eye" and referenced Clausewitz's definition of *coup d'oeil*, in his Mission Command White Paper published in April 2012.¹¹ Despite this emphasis from the senior uniformed member in the United States Government, much of the education and training continues to be rooted in developing analytical rather than intuitive skills. Although there is a definite requirement for military leaders to develop sound

¹⁰ Sun Tzu, *The Art of War*, trans. Lionel Giles (Meneola, NY: Dover Publications Inc, 2002), 51.

¹¹ Martin E. Dempsey, "Mission Command White Paper," Joint Chiefs of Staff Website, Accessed April 25, 2013, http://www.jcs.mil/content/files/2012-04/042312114128_CJCS_Mission_Command_White_Paper_2012_a.pdf, 5.

analytical skills, it is imperative that leaders understand more than one method for decision making and the benefits and flaws of each. Most importantly, education on relatively recent discoveries of how human beings sort through information to arrive at a decision should be included in any professional military curriculum. In these discoveries, scientists determined that the human brain develops “intelligent memory” where analysis and intuition are combined and impossible to separate.¹² This breakthrough had a significant impact because until this moment, many scientists believed that the two systems of the brain operated independently and humans made decisions using one or the other, but not both. So why is this important for military leaders to learn? A journey to the Battle of Gettysburg during the American Civil War illustrates one potential reason.

Widely considered the culminating point for the Confederate Army during the American Civil War, the Battle of Gettysburg is an excellent case study in battlefield decision making by an extremely experienced leader. In particular, General Robert E. Lee’s decision to order Pickett’s Charge over open terrain directly at the center of the opposition army has baffled many historians and military professionals.¹³ Some argue that the tactical plan was flawed while others theorize that General Lee relied too much on his intuition and experience (*coup d’oeil*), failing to apply the correct level of analysis and adaptation. David C. Gombert and Richard Kugler, Distinguished Research Professors at the National Defense University, argue that Lee failed to use adaptive decision making, demonstrated arrogance, and was not self-aware during the Battle of Gettysburg.¹⁴ Regardless of the opinion on the

¹² William Duggan, “Coup d’oeil: Strategic Intuition in Army Planning,” accessed March 8, 2013, <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubid=631>, 1.

¹³ David C. Gompert and Richard L. Kugler, “Lee’s Mistake: Learning from the Decision to Order Pickett’s Charge,” *Defense Horizons*, Number 54 (2006), accessed March 8, 2013, <http://www.ndu.edu/CTNSP/docUploaded/DH54.pdf>, 1.

¹⁴ *Ibid.*, 7.

decision making process used by Lee, most historians agree that he had enough information available to make a sound decision. The problem was that Lee did not understand the limitations of his decision making process. His previous and recent experiences in battle with the Union Army influenced his judgment by altering his intuition. Had General Lee understood the two systems at work during a decision and realized some of his own limitations, he might have listened to the advice of his commanders and selected an alternate option. The importance of studying this decision should not be lost on any military leader because it transcends tactics or technology. Lee's reliance on his instinct proved catastrophic for the Confederate Army at Gettysburg. The same could occur today if leaders are not familiar with how people make decisions and the impact of information saturation. General Dempsey recognized the potential of this when he warned of several "things that get in the way of mission command," namely the volume and speed of information that "can easily overwhelm the commander."¹⁵

Risk Aversion

In addition to suppressing intuition, the American military's search for information superiority creates a risk averse culture. This occurs because leaders require more data to make decisions in order to avoid backlash if the outcome is negative. This phenomenon seems to be worsening as leaders at all levels now sometimes have instant access to information that would normally have taken much longer to process and disseminate. The United States military is a networked organization capable of collecting and distributing information across a vast array of digital systems. This alone is extremely beneficial and provides a level of situational awareness unheard of just a few decades ago. However, there

¹⁵ Dempsey, "Mission Command," 7.

are some pitfalls of having relatively easy access to a massive amount of information, one of which is how the military deals with risk and decision making.

Psychologists have long studied the topic of risk in relation to decision making. In fact, Daniel Bernoulli produced findings in 1738 connecting risk aversion to wealth and showing that people, in general, were risk averse.¹⁶ Additionally, many professionals studying this field and correlating risk with chance have used a simple coin toss decision experiment where one side is associated with a monetary loss, the other with a gain. Researchers found that when the difference between the loss and gain is relatively small, losses have a more significant impact than gains and people are loss averse.¹⁷ Although some have recently called into question the accuracy of determining risk aversion in relation to wealth, the principle remains solid. People oftentimes make decisions based on a cost versus reward mentality. As the gap between cost and reward shrinks, so does a person's willingness to accept risk. The United States military appears to be acutely aware of this based on the amount of references to risk throughout numerous documents on leadership and decision making. Nonetheless, it fails to address how leaders should manage a continuous information stream to make a decision at the right time while avoiding risk aversion.

A simple tally of the word "risk" in two publications governing military planning and decision making will illustrate the emphasis on this topic. Joint Publication 5-0, a 264-page document, mentions "risk" 125 times while Army Doctrine Publication 5-0 uses it 17 times over 30 pages. Army Doctrine Publication 5-0 goes even further, qualifying the word with *prudent* and defining that type of risk as "a deliberate exposure to potential injury or loss when the commander judges the outcome in terms of mission accomplishment as worth the

¹⁶ Daniel Kahneman, *Thinking Fast and Slow* (New York: Farrar, Straus, and Giroux, 2011), 434.

¹⁷ *Ibid.*, 284.

cost.”¹⁸ To further muddle the topic, the Chairman of the Joint Chiefs stated “we must collectively promote a culture that values *calculated* risk as the means to generate opportunity,” (emphasis added).¹⁹ Are these distinctions simply trivial or do they have greater meaning? Varying doctrinal terms and definitions for the same topic are common occurrences in the American military and not significant or controversial. However, none of these documents address a person’s tendency to be risk averse or ways to minimize this inclination. The United States military prides itself on leadership and sound decision making in an uncertain environment but seems to avoid educating and training leaders to overcome challenges associated with risk in this same atmosphere. It can be tempting for a decision maker to wait on more information with the assumption that risk might decrease as more is known about a situation. Additionally, this temptation can certainly increase given the technological capability of the United States military to gather information. Thus, it is incumbent on the United States military not only to educate but also train its leaders to minimize the possibility of risk aversion.

Stifling creative and critical thinking

Similar to other harmful effects, the American military pursuit of information superiority stifles both creative and critical thinking. It produces an overreliance on the analysis of facts and data rather than emphasizing new or reflective ideas. Although there is some interest in new methodologies intended to foster this type of thinking, much of the military training and education focuses on collecting information, analyzing data, and producing options for a decision maker from which to choose. This type of process can prevent planners and

¹⁸ ADP 5-0, 13-14.

¹⁹ Dempsey, “Mission Command,” 8.

decision makers from developing original ideas or ways to address a situation, especially when combined with other barriers already present in our minds.

Creative or critical thinking is often referenced within the context of problem solving. For many, the distinction between problem solving and decision making is unclear. In fact, some researchers consider decision making to be a subset of problem solving whereas others see the adverse. Regardless, the difference appears to be less important than how human beings approach and solve the various problems they encounter. Klein argues that even when presented with a unique situation, people use two distinct “sources of power” to choose a strategy: “pattern matching (the power of intuition) and mental simulation.”²⁰ American military doctrine, education, and training somewhat address these sources of power, but fail to develop a leader’s ability to strengthen each source.

The United States military’s voyage to creative problem solving appears to follow a road called design. As usual, the various doctrinal publications addressing this topic have different definitions and explanations for design methodology. However, these documents tend to agree that creative and critical thinking are essential components to the process. The Chairman of the Joint Chiefs echoed this point in reference to mission command, stating that our military education system “must place students in situations of uncertainty and complexity where creativity, adaptability, critical thinking, and independent, rapid decision-making are essential elements.”²¹ The problem is that American military leaders receive more education and training on iterative planning and decision making processes rather than topics or situations that strengthen their ability to develop innovative solutions to problems.

²⁰ Klein, *Sources of Power*, 141-142.

²¹ Dempsey, “Mission Command,” 6.

A controversial military war game exercise conducted in 2002 illustrates the perils of neglecting this much needed skill.

Millennium Challenge '02 is memorable for several reasons some of which include the number of forces involved in the exercise, outcome of actions during the exercise, and its similarity to subsequent real-world events. The war game pitted a so-called Red Team led by retired Marine Corps Lieutenant General Paul K. Van Riper against a Blue Team led by the United States Joint Forces Command. What occurred in the opening stages of the war game highlights the need to educate, train, and reinforce creative and critical thinking in the American military. Van Riper's forces were able to significantly damage or destroy superior U.S. warships using speedboat swarming tactics, sinking 16 of the Blue Team's major warships.²² According to Van Riper, "the whole thing was over in five, maybe 10 minutes."²³ The Red Team was able to inflict these losses because it developed a somewhat innovative way to attack a superior force that did not anticipate such tactics. Indeed, Van Riper developed the swarming attack concept by modeling insects or other animals such as ant colonies or wolf packs who usually move in groups to dominate their oftentimes much larger victim.²⁴ In essence, Van Riper used a combination of pattern matching and mental simulation to develop a course of action that addressed the problem he faced. This data was equally available to the Blue Team, and no doubt recalled at the conclusion of the battle. The key is for the United States military to develop this creative ability in all leaders prior to learning it the hard way.

²² Thom Shanker, "Iran Encounter Grimly Echoes '02 War Game," *Pittsburgh Post - Gazette*, Jan 13, 2008, <http://search.proquest.com/docview/390723397?accountid=322> (accessed April 28, 2013).

²³ Ibid.

²⁴ Ibid.

Centralized Control and Centralized Execution

Equally troubling implications of the American military's hunt for information superiority is the creation of a centralized control and centralized execution atmosphere. This environment is contradictory to a key principle of United States military operations, that of autonomy. Because commanders have easy and instant access to a range of information, they are inclined to make decisions that were once made at lower echelons. This phenomenon, also known as micromanagement, can erode the fabric from which the military is structured. In his Mission Command White Paper, General Dempsey warned of this, noting that commanders "can easily penetrate to the lowest level of the command and take over the fight" thereby leading to micromanagement, "a debilitating inhibitor of trust in the lower echelons of the force."²⁵ Although predictive, General Dempsey's counsel seems to be forgotten at times.

It is widely accepted in the military community that higher level command interest will increase proportionally with the stakes of an operation. Sometimes, the only thing prohibiting a commander from managing an operation well below his or her level of authority is the time and capability to do so. What happens when neither of these variables prevents a commander from interceding? Two separate events in Vietnam and one recent American operation demonstrate potential outcomes of what some have called "the misdirected telescope."²⁶

For the American military, the Vietnam War was a turning point for several reasons. Occurring during a time of international stand-off between two superpowers, it was the first war to witness the use of several technological advancements, including those of information

²⁵ Dempsey, "Mission Command," 7.

²⁶ Martin L. Van Creveld, *Command in War* (Cambridge, MA: Harvard University Press, 1985), 251.

collection and communication. It was also the first American war where images from the battlefield were broadcast near simultaneously to households across the United States. Thus, military and political leaders were presented with a unique set of circumstances not encountered by previous generations. Within this context, two examples of “the misdirected telescope” provide an understanding of its consequences. In 1967, during the height of American involvement in the war, Secretary of Defense Robert McNamara was called upon to settle a dispute between the Joint Chiefs of Staff and Office of Systems Analysis on whether two C-141 cargo aircraft would be sent to Vietnam. Additionally, late that same year, President Johnson was asked to decide on sending three more battalions to Vietnam.²⁷ Both of these seemingly inconsequential decisions came at a time when America had nearly a half million troops already in Vietnam. For the President to decide on an additional 1,000 troops and the Secretary of Defense to consider two more airplanes seems ludicrous. However, because of the decision system in place and the new found ability to easily communicate with national level leadership, decisions were made well above the normal level of authority.

Similarly, over 40 years and much technological advancement later, the American military revived “the misdirected telescope” during Operation Odyssey Dawn / Unified Protector in Libya. Although this operation was completely different from Vietnam at every level of war, comparisons in command decision making exist. During this conflict, American military leaders were unable to exercise some level of autonomy because of a rigid approval process and restrictive rules of engagement. Specifically, numerous cases occurred where due to low fuel, coalition aircrews returned without engaging targets because of a

²⁷ Ibid., 246.

significant delay in engagement approval.²⁸ This extended approval process existed because senior leaders failed to delegate the authority to a lower echelon. Because of their information and communication technology, these senior leaders felt capable of providing a timely decision to the war fighter. However this was not the case. Instead, the prolonged process for engagement approval created mistrust within the coalition since rebel fighters doubted that the NATO air campaign was achieving results in reducing regime forces.²⁹ Thus, centralized control and centralized execution not only can affect organic forces, but also allies who rely on American autonomy and responsiveness.

The Fog and Friction Fallacy

Perhaps the most dangerous outcome of the American pursuit for information superiority is that it creates the false belief that the fog and friction of war can be removed. By emphasizing the collection of data to provide a decision maker with the most information possible, United States military leaders inadvertently minimize the importance of focusing on the principle of interaction. The intent to reduce ambiguity and provide leaders with real-time situational awareness is a sound principle. However, some have argued that technology can almost completely remove uncertainty, providing a decision maker with “the Holy Grail of intelligence: accurate and timely indications of exactly when, where, how and why an opponent will strike.”³⁰ The Battle of Midway during World War II is perhaps one of the best examples where the American military practically achieved this. However, if the

²⁸ Jason R. Greenleaf, “The Air War in Libya,” *Air and Space Power Journal*, March-April 2013, <http://www.airpower.au.af.mil/digital/pdf/issues/2013/ASPJ-Mar-Apr-2013.pdf>, 41.

²⁹ Ibid.

³⁰ Erik J. Dahl, “Why Won't they Listen? Comparing Receptivity Toward Intelligence at Pearl Harbor and Midway,” *Intelligence & National Security* 28, no. 1 (2013): 68, <http://search.proquest.com/docview/1312773471?accountid=322> (accessed May 5, 2013), 80.

Japanese had not been so cooperative in following their revealed intentions, the outcome might have been quite different.

Throughout the past decade, especially as information collection, sharing, and dissemination improved, numerous military professionals and researchers theorized that the fog of war could be lifted or at least minimized to a manageable level. In fact, Admiral Bill Owens, former Vice Chairman of the Joint Chiefs of Staff authored *Lifting the Fog of War* in 2000 where he contended “the technology that is available to the U.S. military today and now in development can revolutionize the way we conduct military operations.”³¹ Granted, the American military conducts war much differently than even a few decades ago. However, the United States military finds itself in the 12th year of a conflict reminiscent of wars fought well prior to the creation of the technology referenced by Admiral Owens. His assertion that military commanders now possess enough information about the enemy and the battlefield “to deliver the coup de grace in a single blow” appears out of place when viewed through the lens of the preceding decade.³² Perhaps Napoleon’s *Maxim* that “a general never knows anything with certainty” remains valid nearly 200 years later.³³

Another contemporary example that supports the lasting principles of fog and friction can be found in the other American theater of war during the first few years of this century. Regardless of opinions on the decision to go to war with Iraq in 2003, examples of fog and friction during military operations were plentiful throughout all phases of this conflict. Indeed, one only needs to recall the various media reports from imbedded journalists and senior military officials during the initial combat phases of Operation Iraqi Freedom to illustrate this point. Even the General in charge of the operation, Tommy Franks, with

³¹ Bill Owens, *Lifting the Fog of War*, (Baltimore: Johns Hopkins University Press, 2000), 14.

³² Ibid.

³³ Ibid., 11.

massive amounts of real-time data projected into his operations center, became a victim of fog or friction at times. While viewing Blue Force Tracker icons during one mission, General Franks was deceived by too much information. Because the tracking map showed elements of the Army's V Corps with no enemy in front of them and seemingly idle, Franks determined that they were stalled for some reason and not fighting.³⁴ Angry of this unplanned halt and potential loss of momentum, Franks sought answers from his land component commander. After their discussion, Franks learned that the forces were not conducting an unplanned pause, but actually engaged in one of the most significant battles of the invasion against Saddam Fedayeen teams.³⁵ General Franks did not see Iraqi icons because they did not exist on a scale comparable to the much larger American forces.³⁶ This one example could have been repeated countless times during the invasion and subsequent operations. It proves that regardless of available technology, fog and friction will remain a component of warfare. Additionally, it confirms that forces directly engaged in combat are usually more equipped to make timely, accurate decisions than someone in an operations center far removed from the action.

Conclusion

Anyone with access to the internet can attest to the massive amount of information available with the stroke of a few keys. This technology presents a host of benefits, some of which were discovered numerous times in the course of writing this essay. What formerly required a trip to the library, rifling through a card catalog, and the tedious task of actually reading the material is done much more efficiently today. In fact, one needs not leave the comfort of

³⁴ P.W. Singer, "Tactical Generals: Leaders, Technology, and the Perils of Battlefield Micromanagement," *Air & Space Power Journal* 23, no. 2 (2009): 78-87,127, <http://search.proquest.com/docview/217805533?accountid=322> (accessed May 5, 2013), 81.

³⁵ Ibid.

³⁶ Ibid.

their home to have access to the data that would probably fill every library around the globe several times over. It is within this extremely responsive environment that the United States military must collect and analyze data to make decisions. How decision makers arrive at a choice is well documented, and new discoveries occur as scientists better understand the human brain. Nevertheless, the United States military appears to remain focused on the rational choice method of decision making. Although recent documents and changes to doctrine indicate a potential shift, changes in education and training are slow to follow. This creates a capability gap in the decision making skills of American military leaders.

Many believe that decision makers can never have too much information because more information equates to a more informed decision. However, this maxim could not be further from reality, and American military leaders are the unfortunate recipients of this misguided concept. The pursuit of information superiority has degraded American military leaders' ability to make intuitive judgments, develop creative solutions, and critically consider a situation. Additionally, this hunt for more information increases a leader's risk aversion and propensity to micromanage subordinate leaders, two trends that can quickly erode trust among the force. Despite the claims of some, information superiority can increase fog and friction for military leaders instead of reducing or removing it. It is because of these reasons that the United States military should address shortfalls in education and training to decrease the chance of self inflicted decision failures.

Recommendations

Although it would be unreasonable to suggest that leaders simply ignore incoming data to prevent the problems previously mentioned, adjustments to the U.S. military's approach to decision making should occur. Determining specific solutions for these problems is well

outside the scope of this essay and would require a much more in-depth study to be truly valuable. Instead, it would be more beneficial to suggest a framework for approaching the issue, one that may help determine potential starting points for action.

In order to develop leaders who are prepared to make effective decisions with or without information superiority, the United States military should consider and emphasize alternate planning and decision making models. These models currently exist and some senior military leaders like General Dempsey have indicated their importance. However, aside from cursory coverage, short essays, and changes to phrases in doctrine, there appears to be a lack of tangible implementation. The United States military needs to instruct and train these models from pre-commissioning to retirement. Developing these skills in junior leaders will allow them to improve their decision making ability by being able to reference a host of processes rather than focusing on just one. As researchers continue to increase their knowledge on how the human brain processes information to develop a decision, so too must the American military. The failure to adapt as information continues to multiply could be detrimental to a military built on the foundation of flexibility and sound leadership.

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